

Image



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Kazuhiko TAKADA Group Art Unit: 2811 ✓
Serial Number: 09/528,296 Examiner: Ori Nadav
Filed: March 17, 2000 Confirmation No.: 4124
For: SEMICONDUCTOR DEVICE HAVING A GUARD RING
Customer No. 38834

REPLY BY APPLICANT UNDER 37 C.F.R. § 1.111
REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

April 23, 2004

Sir:

Applicant responds herein to the January 23, 2004 Office Action.

Claims 1-4 and 7-12 are pending in this application. Claims 1-4 and 7 were examined on the merits in the last Office Action. Claims 8-12 are withdrawn from consideration. No claims are amended, canceled, or added with the present submission.

Applicant thanks the Examiner for the opportunity his representative to discuss the prosecution of the present application during a personal interview conducted on April 19, 2004. Applicant provides a statement of the substance of the interview in the discussion below addressing the anticipation rejection.

Claims 1-4 and 7 stand rejected under 35 U.S.C. § 103(a) as obvious over the prior art depicted in the present application, labeled "Admitted Prior Art (APA)," in view of *Cook et al.*

(U.S. Patent No. 6,022,791) and *Chiang et al.* (U.S. Patent No. 5,817,572). Applicant respectfully submits that the rejection should be withdrawn.

Base claim 1 describes a semiconductor device with a guard ring pattern that includes:

[a] conductive wall changing a direction thereof repeatedly and alternately in one of a triangular wave pattern and a rectangular wave pattern.

Claims 2-4 and 7 depend from claim 1, so they include this feature by virtue of their dependency.

The applied prior art does not suggest such a semiconductor device.

The Office Action indicates that the rejection relies on the *APA* guard ring structure 12 to teach a guard ring pattern, but the Office Action also acknowledges that this structure does not change direction repeatedly and alternately. Accordingly, to justify the obviousness rejection relying on *APA* as the primary reference, the Office Action must provide a suggestion to modify the guard ring structure 12 to change direction repeatedly and alternately. Applicant respectfully submits that the Office Action does *not* provide an adequate motivation for such a modification.

The rejection relies on *Cook et al.* to suggest modifying the *APA* guard ring structure 12 to change direction repeatedly and alternately as claimed. Applicant acknowledges the *Cook et al.* disclosure of conductor patterns 60 and 70 of Figs. 5a and 8a, respectively. Applicant also acknowledges that *Cook et al.* explains in col. 1, lines 13-40, that dicing semiconductor wafers was known to cause the problem of cracks propagating across chips into the active device area (note Fig. 2), which leads to chip failure. Applicant further acknowledges that *Cook et al.* professes to solve the problem of crack propagation in col. 4, lines 4-19, by forming conductor 60 into a serpentine ring.

However, the Office Action does not indicate how it was supposedly known that that crack propagation was ever a problem in the *APA* device. Without a showing that it was known in the art that crack propagation was a problem *in the APA device in particular*, it has not been

shown that one skilled in the art would be motivated to change the *APA* guard ring structure 12 to change direction repeatedly and alternately as claimed. Accordingly, the rejection should be withdrawn.

The *APA* disclosure itself fails to disclose that that crack propagation similar to that disclosed by *Cook et al.* was a problem.¹ The *APA* disclosure also does not say that the semiconductors 11 on semiconductor wafer 10 are separated from each other by the type of dicing described by *Cook et al.* The *APA* disclosure does not even say that *any* type of dicing is used for semiconductor separation. Accordingly, to justify the obviousness rejection, a showing must be provided *from another prior art source* that teaches or at least suggests that crack propagation from dicing was problem in the *APA* semiconductor device.

During the April 19, 2004 interview, the parties discussed the need for a method for *APA* semiconductors 11 on semiconductor wafer 10 to be separated from each other. The Examiner questioned whether dicing as practiced by *Cook et al.* was also practiced in the *APA*.

Applicant respectfully responds that the basis of the *APA* teaching is limited to that disclosed in the written disclosure of the *APA*. If the Examiner believes that the dicing as practiced by *Cook et al.* was also practiced in the *APA*, he is requested to provide a prior art showing of this supposed fact. He is requested not to rely on Official Notice, because, as with the *Cook et al.* disclosure, it must be ascertained if the disclosed prior art dicing would properly apply to the *APA* semiconductor device. Therefore, a general holding of Official Notice as support for the rejection would not suffice.

¹ The *APA* discusses a different problem, that of exfoliation that occurs as a result of chemical mechanical polishing (CMP). (Note, e.g., the text beginning at p. 7, line 11.) The Office Action provides no indication of any *Cook et al.* discussion of a solution to *this* problem.

Nonetheless, if the Examiner chooses to rely on his personal knowledge of the prior art as his basis for the rejection, he is requested to clearly state on the record that his personal knowledge is provided as the basis in place of a written prior art document.

In the absence of a showing that it was known in the art that crack propagation was a problem *in the APA semiconductor device in particular*, applicant respectfully asserts that the obviousness rejection cannot be justified. Accordingly, the rejection should be withdrawn.

In view of the remarks above, applicant now submits that the application is in condition for allowance. Accordingly, a Notice of Allowability is hereby requested. If for any reason it is felt that this application is not now in condition for allowance, the Examiner is invited to contact applicant's undersigned attorney at the telephone number indicated below to arrange for disposition of this case.

In the event that this paper is not timely filed, applicant petitions for an appropriate extension of time. The fees for such an extension, or any other fees which may be due, may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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